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FILING DATE: February 05, 2004

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This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(c).

INVENTOR(S)

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☐ Additional inventors are being named on the _____ separately numbered sheets attached hereto

TITLE OF THE INVENTION (280 characters max)

CARTRIDGE GLUE GUN

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ENCLOSED APPLICATION PARTS (check all that apply)

☒ Specification Number of Pages

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☐ Other (specify)

☐ Application Data Sheet. See 37 CFR 1.76

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Respectfully submitted,

SIGNATURE



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202-835-1111

Date 02/05/2004

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30,340

(if appropriate)

Docket Number:

70300-0106

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P19SMALL/REV05



CARTRIDGE GLUE GUN

TECHNICAL FIELD

This invention relates to the art of dispensers for adhesive products. In particular, the invention relates to a glue gun having a replaceable cartridge of glue and an optional heater for heating the cartridge and glue.

BACKGROUND

Hot melt glue guns employing glue sticks are known. These glue guns utilize glues that can be formed into sticks that have enough rigidity at room temperatures that they can be urged into a melt chamber by a feed mechanism of some sort that grips the stick. These glue guns are limited, however, by the inability to utilize adhesives that are not necessarily rigid at room temperatures. For example, these glue guns are not useful with adhesive compositions that are liquid or semi-liquid at room temperatures.

Dispensers are known for adhesive compositions that are semi-liquid at room temperature, and these take the form of the known caulking gun. In this structure, the adhesive is placed in a tube that is received in a dispenser of some sort. The dispenser typically has a ratchet type plunger operated by a trigger mechanism of some sort. The plunger is urged along the tube as the plunger is advanced, and this forces adhesive from the tube by increasing the pressure in the tube. A problem with this type of dispenser is that the tube is resilient, and significant pressure remains in the tube even after the motion of the plunger is terminated, which results in dripping.

SUMMARY OF THE INVENTION

In accordance with the invention, a glue gun comprises one or more cartridges of adhesive and a handle for removable receiving the cartridges. The cartridge is in the form of a tube, generally, and in addition to containing adhesive to be dispensed includes a movable plug at one end and a valve adjacent a selected dispensing tip at the other. The handle includes a plunger that engages the movable plug and is operated by the user.

In accordance with another feature of the glue gun of the invention, a heater stand is provided that receives the cartridge for heating the adhesive.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a perspective of a glue gun in accordance with the invention, with a glue cartridge in place.

Figure 2 is an exploded perspective of the glue gun of figure 1 showing the cartridge removed from the handle.

Figure 3 is partial vertical cross section of the handle portion of the glue gun of figure 1.

Figure 4 is an exploded view of the cartridge of the glue gun of figure 1.

Figure 5 is a perspective of the glue gun of figure 1 in a heater stand in accordance with the invention.

Figure 6a is a side view of a heater element used in the heater stand of figure 5.

Figure 6b is a front view of the heater element of figure 6a.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

With reference to figure 1, the glue gun of the invention comprises a handle portion 2 and a cartridge portion 4. The handle portion includes a plunger 6 that the user controls by trigger 8. With reference to figure 2, it will be appreciated that in the preferred embodiment, the cartridge

includes a lip 10 at one end and that this lip is configured to engage a slot 12 in the handle when it is in an operative position on the handle as shown in figure 1. Handle 2 also includes a cradle portion 14 that supports a portion of the cartridge that is forward of the lip 10. It will be appreciated that this construction provides easy installation or removal of the cartridge to facilitate the user's ability to use a variety of adhesive compositions during a single project.

Figure 3 illustrates the preferred mechanism for advancing the plunger 6. This mechanism is similar to that in USP 4,523,705. Such mechanism includes the trigger 8, which engages a lever 16 that is pivotally mounted to the housing at 17. The upper part of the lever is connected by a link 18 to a pivoting gripper 20. The gripper is pivotally mounted to a housing 22 through which the plunger 6 passes. The user pulls the trigger, which rotates the lever 16 and the gripper 20. When rotated the gripper engages the bottom of the plunger and the housing then moves forward to advance the plunger. A return spring is connected between the link 18 and the handle to control the rotation of the gripper and motion of the housing as is explained in the '705 patent. The return spring causes the gripper to pivot downward immediately upon the user's releasing pressure on the trigger. The spring also pulls the housing rearward so that it will be in a position to engage the plunger again at a location whereby it can advance the plunger upon application of pressure to the trigger.

By the above construction, the plunger is immediately disengaged from the advancing mechanism upon release of pressure on the trigger. This, in turn immediately releases the pressure in the cartridge that is caused by the plunger.

Figure 4 illustrates the preferred construction of the cartridge 4. The cartridge is generally tubular for receiving the adhesive. An outlet 24 is located at a dispensing end of the cartridge and is configured to receive a selected dispensing tip 26, which may take any of several

forms as illustrated depending on the particular project. For example, the tips may be broad to lay down a ribbon of glue or may be cylindrical of various diameters.

Preferably, a valve 28 having the form of the valve described in United States Provisional application serial number 60/473,930 and filed on May 29, 2003, is disposed in the front of the cartridge. This valve efficiently controls the discharge of the adhesive.

A feature of the invention is the combination of the valve 28 and the feed mechanism. When pressure on the trigger is removed, the gripping mechanism immediately releases the plunger, which releases the pressure on the adhesive in the cartridge. The valve 28 then quickly closes in response to the reduced pressure, and this results in greatly reduced dripping.

The plunger is preferably configured with a lower surface that cooperates with the gripper mechanism to provide fine control of the plunger. In one embodiment, the lower surface of the plunger is provided with teeth that are engaged by the gripper when it pivots upward. The pitch of these teeth may be very small to provide accurate control. For example, a pitch of about 0.030 inch has been found useful. In another embodiment, the lower surface of the plunger is provided with a urethane or rubber-like compound that provides a good grip to the gripper, much as a glue stick, but which is resilient to be used repeatedly.

Figure 5 illustrates another feature of the invention. A heater stand is provided to receive the cartridge and to heat the adhesive in the cartridge. The stand includes a base part 32, which is designed to rest on a horizontal surface. An upper part 34 includes a cylindrical part for engaging the cartridge. Thus, the bottom surface of the upper part engages the forward edge of the handle and the upper portion of the upper part extends rearward to cover more of the cartridge.

Figure 6a is a side view of a heater casing 36 that is received in the heater stand shown in figure 5. The heater casing 36 is shaped to receive the cartridge and to also receive a heater element (not shown) in cavity 38.

Modifications will be apparent to those of skill in the art.

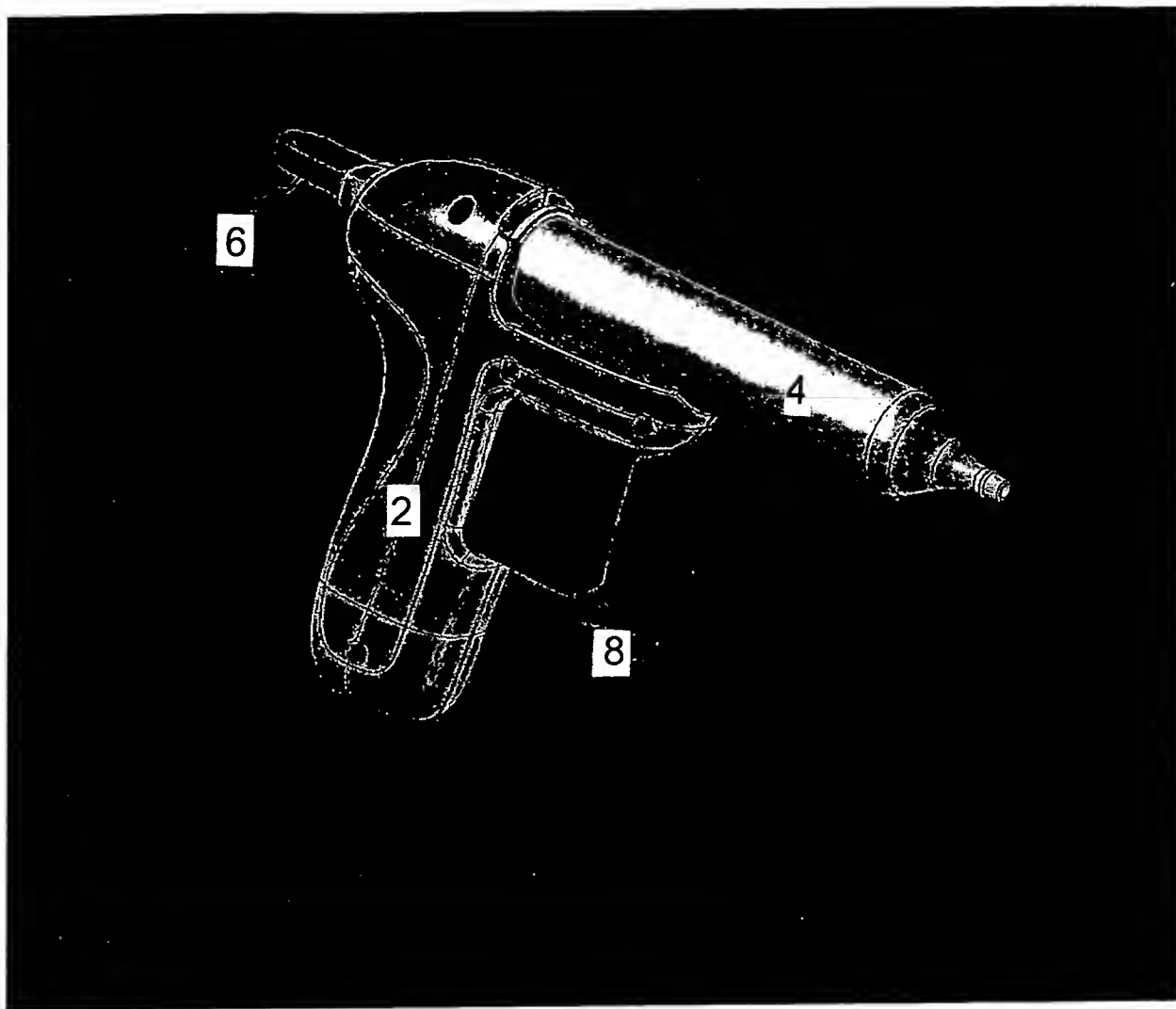


FIGURE 1

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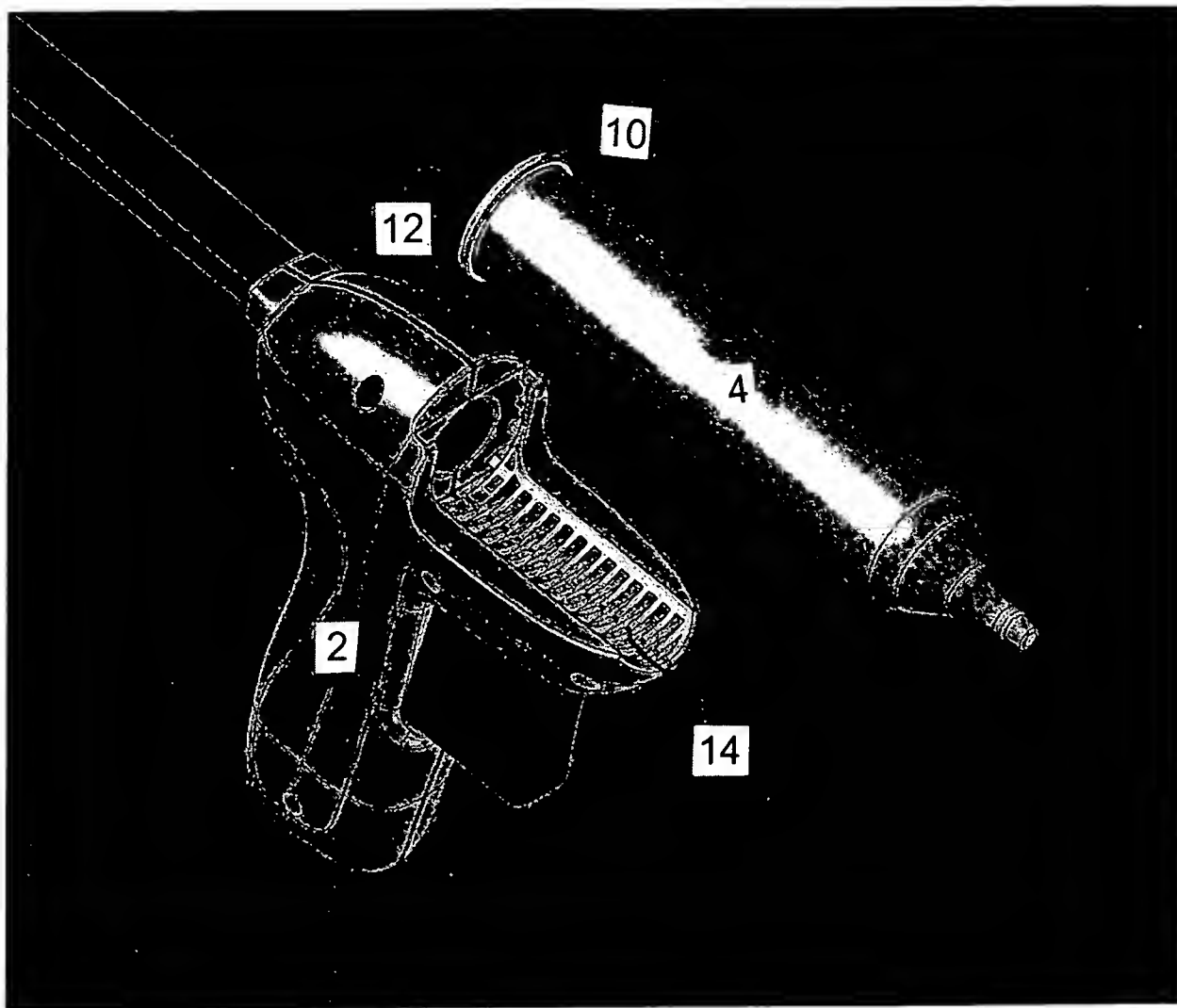


FIGURE 2

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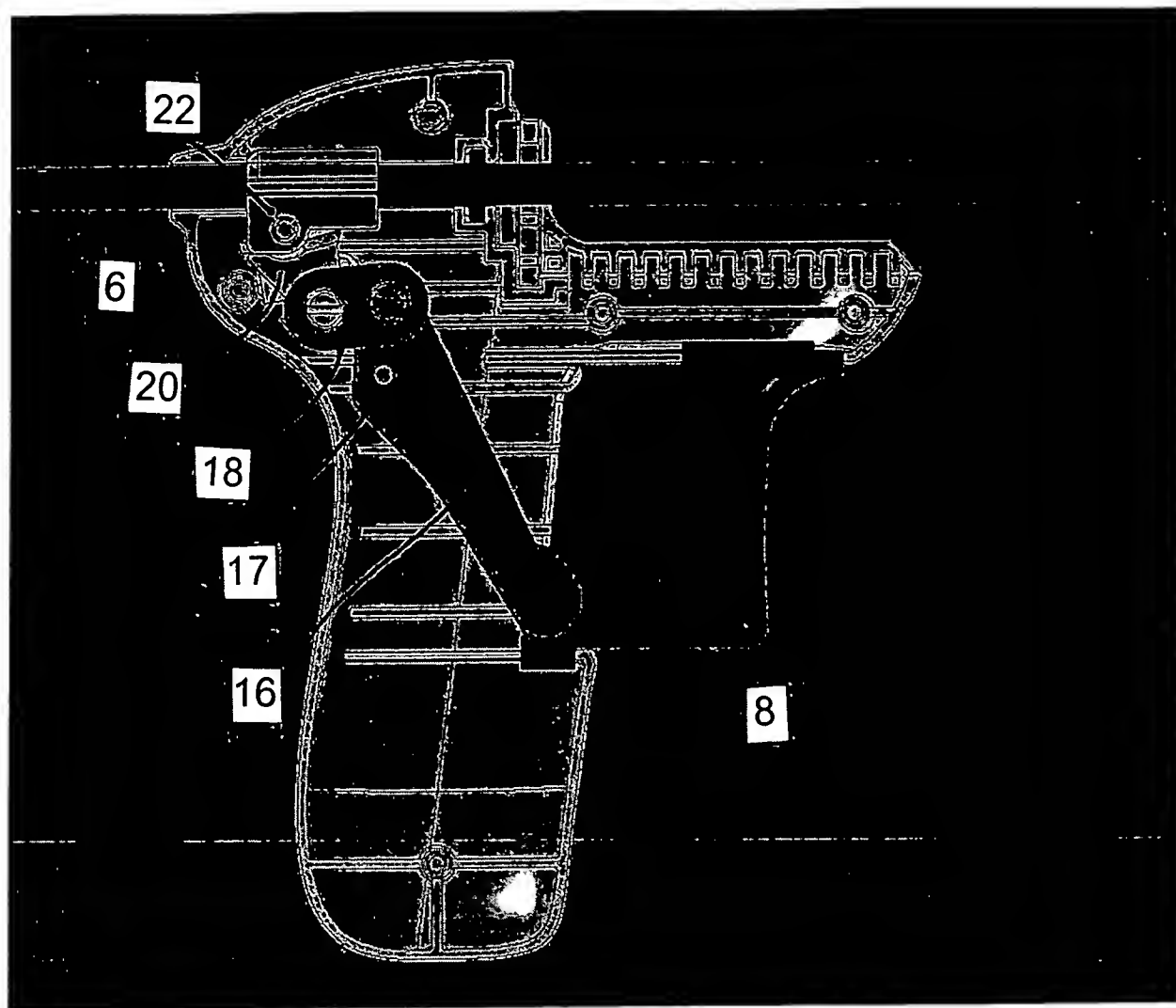


FIGURE 3

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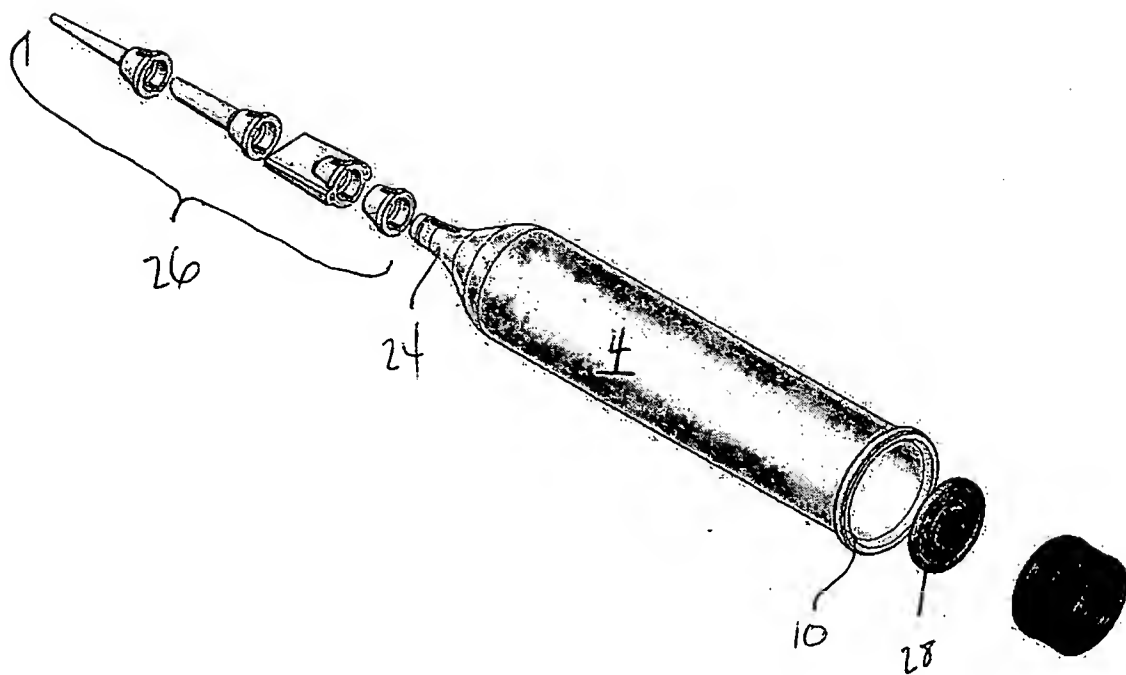


FIGURE 4

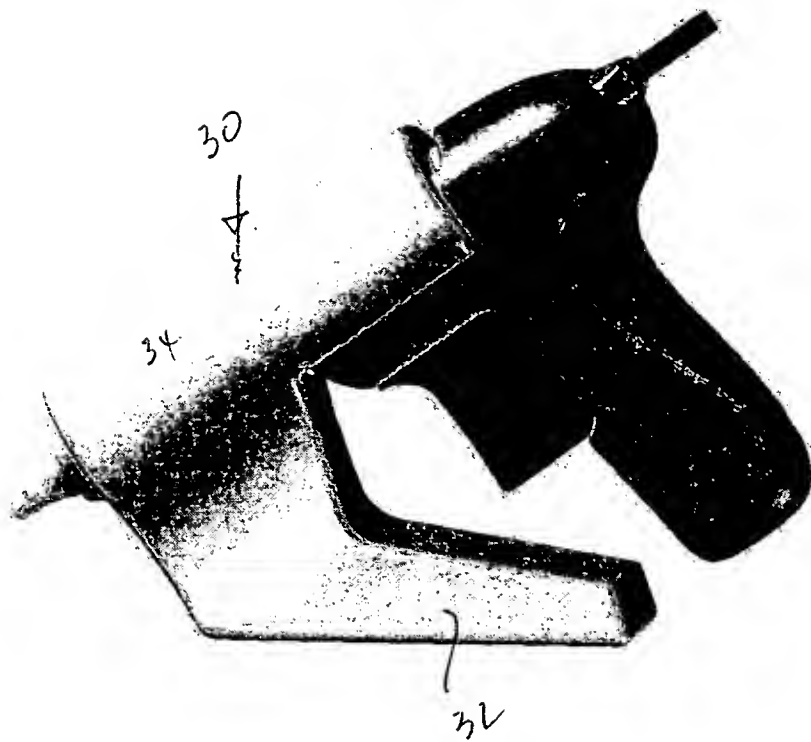


FIGURE 5

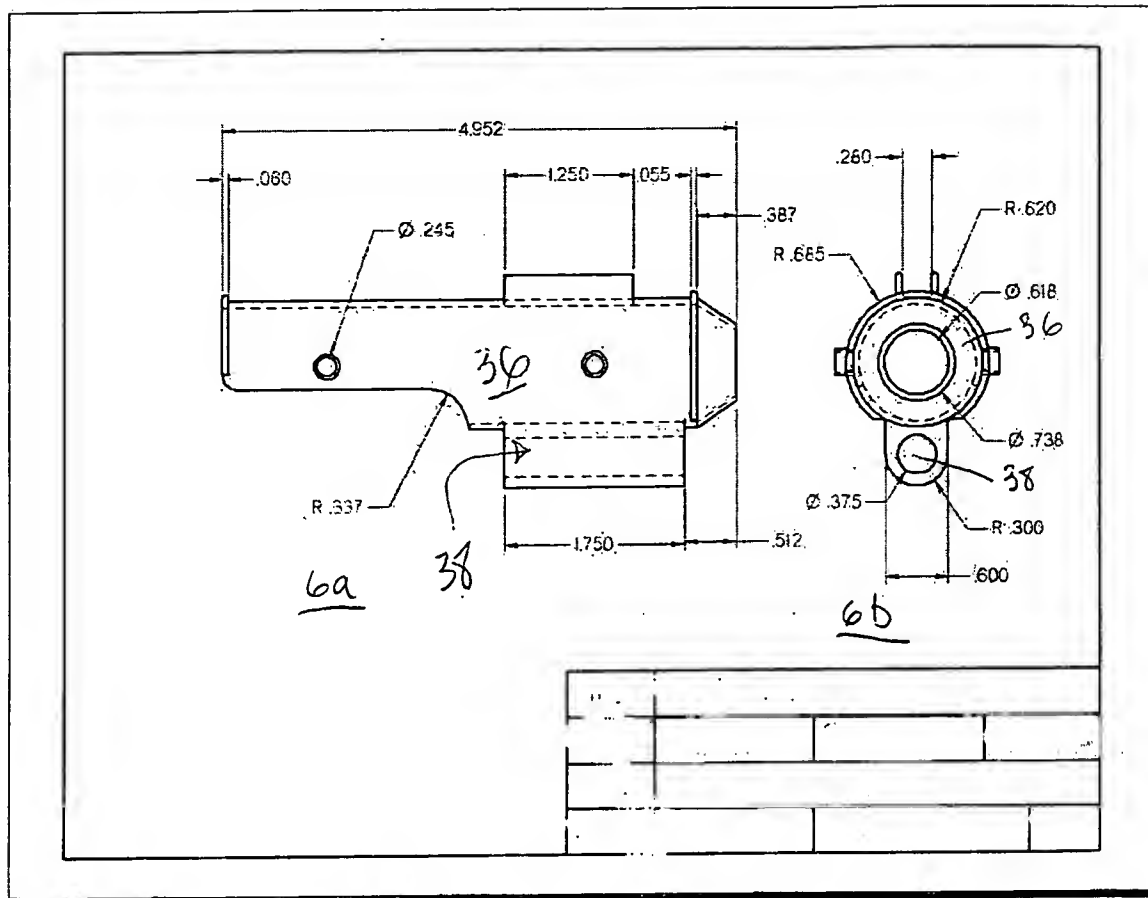


FIGURE 6